342.

IMPERIAL MYCOLOGICAL INSTITUTE
2 JULY 1942

PRICE: 50 Cents

ZANZIBAR PROTECTORATE

ANNUAL REPORT

on the

DEPARTMENT OF AGRICULTURE

for the year ended 31st December, 1941

SECTION I.

AGRICULTURE IN THE PROTECTORATE.

GENERAL.

The effect of the war on the agricultural economy of the Protectorate was marked in the beginning of the year by low prices and lack of demand for copra, but prices rose as the year progressed and the export position was nearly normal. The demand for cloves was good and exports reached a record level. A small export of chillies took place.

As a result of the irregularity of shipping movements, the supply of imported foodstuffs of eastern origin became more difficult, increasing recourse was made to the Mainland of East Africa for supplies, and it became necessary to control the distribution of certain classes of foodstuffs to retailers. The greater part of the time of the Director was occupied in duties arising out of Food and Price Control legislation. On the whole, however, it may be said that throughout the second year of the war the peace-time mode of life of the majority of the population of the Protectorate had not changed appreciably.

Much thought has been given to the question of expanding the cattle industry with a view to improving nutrition by increasing the supply of milk and meat, and on account of the advantages which cattle would bring to the plantation industries by keeping grass down, and providing organic manure. While east coast fever is known to be endemic in the Protectorate, it is not yet certain that this is the factor which limits cattle keeping in these islands.

As a result of the increase in the cost of imported foods, there has been increased food growing in the Protectorate, but there is little doubt that after the war, if cloves are selling again at pre-war prices, there is likely to be a return to the practice of importing cheap foodstuffs from overseas unless special measures are taken to counteract this tendency.

THE WEATHER.

The year was drier than usual in both islands, and whilst the first quarter was hot and dry, the rainfall of the second quarter, the period of the main rains, showed a considerable shortfall. The main rains were irregular, and the usual cloudy conditions were interrupted by spells of hot and sunny weather which was unsuitable for the establishment of tree crops but well suited to annual food crops. The third quarter of the year approximated to normal, and in the final quarter the late rains were above average. Unfortunately, they coincided with the harvesting of a late clove crop and had a deleterious effect on the colour and quality of cloves.

THE MAIN CROPS.

Cloves.—The export for the year of 16,491 tons of cloves is a record, and it appears almost certain that the seasonal crop of 1941-42 will be the second highest which the Protectorate has produced. The bulk of the crop was harvested in the *vuli* period, and there was some difficulty in getting enough labour to pick it as the crop matured in both islands at the same time. The Dutch East Indies took 38 per cent of the export, and the United States of America and India equal proportions. The United States of America was a heavier buyer than usual.

The Clove Growers' Association published declared buying prices for cloves in July, these showing an advance over the previous seasonal year. The average price paid by the Association to producers during the year was Shs. 36 cents 5 per 100 lbs., equivalent to £40-7-6d per ton. The comparable price in 1940 was Shs. 34 cents 21 per 100 lbs.

Coconuts.—It is gratifying to note that, in spite of the difficulties of shipping, exports of copra amounted to 10,751 tons, which, together with an export of 1,040 tons of coconut oil—incidentally another record—equivalent to about 1,700 tons of copra, shows that, in spite of low prices, the average quantity of 12,500 tons of copra was exported from the Protectorate. Prices to the producer were low at the beginning of the year, but improved towards the end, due to the demand from the Middle East, whence a great proportion of the tonnage was exported via Mombasa. Five thousand four hundred and twelve tons went to Mainland ports, 3,485 tons to the United Kingdom, 1,443 tons to India and the balance to Portuguese East Africa and Egypt.

The price of coconuts varied within large limits between the beginning and end of the year, early prices being as low as Shs. 9 cents 50 and late prices rising as high as Shs. 43 per 1,000 nuts. The average price on Government Plantations was Shs. 18 cents 14 per 1,000 nuts with a copra average of Shs. 8 cents 49 per 100 lbs., or approximately £9-10-0 per ton. The copra price compares favourably with that for 1940, which was Shs. 5 cents 67 per 100 lbs. The wide fluctuations in prices tend, however, to induce lack of interest in the crop at low price levels and cause ordinary routine cultivation to be neglected.

FOOD PRODUCTION.

A large rice crop was produced in Pemba, and it is estimated that some 5,000 tons of rice were harvested from the two islands. There is estimated to be manpower and land available to produce at least double this quantity. The normal custom of the majority of

the population is to work for cash wages and to purchase food, and only when cheap rice is unavailable or if cash wages cannot be earned is there likely to be a sustained endeavour to plant foodstuffs to the maximum extent possible. It is to be observed also that, especially in Zanzibar District, the bulk of the first class rice land is not owned by cultivators.

A cursory survey was made of the rice-producing potentialities of the two islands, and, in view of the possibility of receiving reduced supplies from Burma, it was decided to try to increase the cultivation of rice still further in 1942 by means of propaganda, assisted by supplies of seed and seedlings. The increase in the area of land under foodstuffs mentioned in the 1940 report was maintained, but fell off towards the end of the year owing to clove harvesting.

OTHER CROPS.

Pineapples.—This work has been extended a short stage further by the planting of twelve acres of pine-apples at Selem on behalf of the Clove Growers' Association, together with the clearing of a further six acres for planting in April 1942. The plants received two applications of artificial fertilisers and will be ready to can late in 1942.

Chillies.—Fifteen tons of graded chillies were exported during the year, a small but welcome revival of this industry.

DOMESTIC IMPORTS AND EXPORTS.

The value of a comprehensive list of commonly used foodstuffs was £383,000, £343,000 and £397,000 respectively in the years 1939, 1940 and 1941. The rise in value in the year under report was to a great extent due to increases in the prices of imported foods, but there was a substantial increase in the importation of pulses and of maize meal from the Mainland of East Africa as imported rice of Indian origin became more expensive. Increased imports of dates from Arabia and of ghee from East Africa also contributed towards the increased value of food imports.

On the side of exports, which are tabulated below, the outstanding importance of the clove crop is clearly revealed. Other items do not merit special comment, except that it will be observed that the export of oil cakes from the local copra mills was almost at a standstill. Certain local sales of this commidity for use as a fuel were made.

DOMESTIC EXPORTS.

Item	Unit	Quantity	1941 Declared Value	Per cent of Total Value
			£	
Cloves ...	Cwt.	329,823	1,063,455	84.09
Clove Stem Oil ...	lbs.	378,138	90,568	7.16
Copra ...	Tons.	10,751	80,301	6.35
Coconut Oil ...	lbs.	2,337,124	16,069	1.27
Coconuts ...	Nos.	1,158,105	2,276	0.18
Oil Cakes ...	Cwt.	86	14	—
Fruit, fresh ...	—	—	4,385	0.35
Vegetables ...	Cwt.	473	198	0.02
Tobacco unmanufactured.	lbs.	60,470	667	0.05
Hides and Skins.				
Ox hides ...	Cwt.	207	536	0.04
Sheep and Goat Skins ...	Nos.	9,875	375	0.03
Mangrove Bark ...	Tons.	1,209	4,663	0.37
Chillies ...	Cwt.	302	1,032	0.09
Total ...		—	1,264,539	100.00

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

In addition to the facilities provided by the Experiment Station at Kizimbani and the two seed stations, mentioned in the 1940 report, the clove nurseries have now begun to take a small part in assisting in the distribution of plant materials, small reserves of Msitu cassava and sweet potatoes having been established at each of the clove nurseries to serve as centres of extended distribution. Msitu cassava is now as popular as the Caroline Lee potato. At some nurseries the maintenance of pens of Rhode Island Red fowls was continued in order to supply eggs for setting. One hundred and nineteen thousand one hundred and forty-nine clove seedlings were sold from the nurseries.

As regards veterinary work, the Veterinary Officer has proceeded with the training of his subordinate staff who have been employed in the districts in the castration of undesirable types of bulls and in giving inoculation against fowl typhoid.

An effort has been made in Zanzibar to make school gardens more in keeping with the agricultural needs of the people, and seasonal plans have been made for each garden in the district of Zanzibar. It is hoped to extend this practice to Pemba districts.

CLOVES.

By far the greater part of the investigational work on cloves has been centred around the problem of the re-establishment of cloves where the existing trees are being destroyed by the "sudden death" condition.

The earlier experiments to this end usually entailed the felling and clearing of the old trees with manurial or cultural treatments applied to the young transplants. This phase of investigation has clearly shown that young cloves are very sensitive to sun, wind and weed competition, and that the shade and wind breaking effects of dead and dying old trees are of the greatest assistance in ameliorating the depressing effects of these factors. It has now been realized that no stereotyped cultivation programme can be recommended for the establishment of young seedlings, their survival depending on good farming practice determined by local conditions.

The provisions of windbreak and shade falls into two classes. Firstly, where regeneration can be commenced before the completion of "sudden death" and the subsequent removal of dead trees, a simple and sure regeneration method consists in planting seedlings midway between the old trees. What additional treatments, if any, will be necessary to ensure that such plants persist and bear for forty or fifty years remain to be determined. A large block where "sudden death" was present was replanted in this fashion in early 1937. By 1940 all the older trees had succumbed and the young replacements, which had developed in their dwindling shade, had reached a height and vigour sufficient to allow the removal of the dead trees leaving an excellent block of young cloves which have now just commenced to bear. Another experiment was started in 1934 in which the young cloves were planted between lines of then healthy trees and the canopy of the latter gradually reduced year by year as the young trees developed. Costing accounts show that very little difference exists to-date between the profit obtained from this block and an uninterplanted and unlopped control block. "Sudden death" is now widespread herein, but the experimental area now consists of a healthy block of young saplings, which, although temporarily somewhat etiolated, have been established at very little cost.

Secondly, where clear felling has already been done it has been found beneficial to supply shade artificially. The most successful plant found so far has been Gliricidia maculata, and an analysis of mortality amongst clove transplants has shown that a large block established in 1939 under Gliricidia shade suffered roughly half the casualties experienced in the first years by comparable blocks without Gliricidia. A new establishment trial commenced this year embodies the use of temporary shade of the following types:—

1. Gliricidia.
2. Bananas.
3. Sugar-cane.
4. Cassava.
5. Gliricidia and Calopogonium.

These crops are already established, and the cloves will be planted in April 1942. The value of Calopogonium lies in its known ability to check colonization by Imperata grass, a weed which root exposures of young clove plants have clearly shown to be inhibitive of the proper development of the lateral and fibrous root system of cloves. These root exposures showed furthermore the development from year to year of the tap root and the primary and secondary "sinker" roots, also the extent to which ring weeding should be performed for maximum efficiency.

The several manurial experiments in progress have, so far, failed to indicate any tangible effect on clove plants up to the age of six or seven years, but a further manurial trial was laid down this year in the form of a nursery in which clove plants are being grown from seed, and thinnings will be made each year for three years, the uprooted plants to be dried and weighed. Small observational trials have also been started this year to test the effect of time of planting in relation to the main rains and other moot points in transplanting practice.

Finally, a series of statistical analyses were made in which the relationship of girth, canopy and yield were determined for young cloves. These figures should be of value in tentative short term trials before the trees bear steadily and bring to light profitable permanent lines of investigation.

An article entitled "Stem Girth as a Criterion in Field Trials with Young Clove Trees", by Mr. G. E. Tidbury, Agricultural Officer, was submitted to the Empire Journal of Experimental Agriculture for publication.

PINEAPPLES.

The results of spacing and manurial experiments have been statistically examined for the first two seasons, and, as it was conclusively shown that nitrogen increased the weight of pines and close spacing increased the number of pines, another experiment was devised to ascertain the best spacing and manurial treatments to produce the optimum number and size of pines. A uniformity trial is also being conducted.

FOOD AND OTHER CROPS.

Cassava.—A large number of progeny of Msitu and F.279 have now been raised and propagated as separate clones, of which some are very promising in regard to disease-resistance and yield.

Variety trials are being continued.

Maize.—This crop continues to yield an average of about 600 lbs. per acre on the station, and is a better grain crop than either Pennisetum or Sorghum in the clove belt.

Rice.—Variety trials were continued. About two hundred single plant selections were taken from native and experimental fields, and a selection of the most popular varieties of rice in Pemba and Zanzibar was made in order to ascertain by trial the best from which to breed in the future. The whole of the rice valley on the experiment station has been contour-bunded and is capable of being irrigated.

Vegetables.—The cultivation of the vegetables mentioned in the report for 1939 was continued. Of those normally grown in temperate climates only lettuce seeded freely.

Oil Palms.—The block of palms began to bear and oil has been extracted and used for general purposes on the farm.

Citrus.—A search for good parent trees for budwood was made in the citrus experiment area, and the tasting and judging of the fruit of a large population of trees continues.

Derris.—The analysis of the Amani strain of Derris grown at Kizimbani indicates that the maximum yield of rotenone is obtained at about two and a half years from date of planting in the field. This crop gives a very good cover, excluding almost all weeds, and interplanting between young cloves is being attempted.

Pueraria Thunbergiana.—The "Kudzu Vine" has established itself, and seeds well at Kizimbani if it can climb, forms a cover tolerating shade and impenetrable to weeds, and is palatable to cattle.

Liberica Coffee.—There is a demand for seedlings which are now being provided at Clove Nurseries.

VETERINARY.

A start has been made in building up a herd of native cattle for breeding by means of a grant from the Colonial Development Fund. The original Ngong importations have been added to by local purchases, and of sixty-six head on the stock farm fourteen are cows and twenty-two are heifers. The intention is to maintain an Ngong herd and serve local heifers with Ngong bulls. The first case of bovine tuberculosis to be recorded in the Protectorate occurred at the Mtoni Dairies. Tuberculin tests are being conducted. Two hundred and twenty-eight castrations were undertaken and 11,079 vaccinations against fowl typhoid were given.

CHEMICAL LABORATORY.

The Government Chemist was seconded to the Secretariat throughout the year, but continued to supervise the work of the Laboratory which, except for some special examinations, was carried out by the Laboratory Assistant.

The total number of samples received was 1,085 (against 391 in 1940), of which 1,066 were from Government Departments (Agriculture, 1,015; Health, 10; Police, 34; Customs, 7; Clove Growers Association, 3; private firms, 16). The increase over last year was accounted for by 612 samples of cloves examined in

connexion with an investigation of the development of acidity on storage, and 145 samples of soil from the "regeneration" plots at Kizimbani.

Close analytical control was maintained over the quality of clove oil exports. The 87 samples examined represented over 196 tons of oil, compared with 177½ in 1940. The average eugenol content of clove stem oil was 93.5 per cent.

Regular examinations of Zanzibar Public Water Supply showed uniformity and a very satisfactory degree of organic purity.

Miscellaneous samples covered an unusual variety of agricultural products. Some counterfeit coins broke the usual run of liquors and drugs submitted by the Police. The Laboratory continued to issue sodium arsenite baits for pig poisoning, 6,900 being made up and distributed through the District Administration.

SECTION III.

LEGISLATIVE CHANGES AFFECTING AGRICULTURE DURING 1941.

The Public Health Decree: General Notice No. 118.

The Public Health (Amendment) (Slaughter-House) Rules, 1941, was the only change in legislation affecting Agriculture, whereby slaughter was prohibited either in a slaughter-house or elsewhere of

(1) Any cattle not passed fit by a Meat Inspector;

(2) any female bovine under three years of age;

(3) any pregnant bovine;

(4) any female bovine producing milk.

These Rules were introduced in view of the considerable numbers of female cattle of local origin which were being slaughtered.

J. C. MUIR,
Director of Agriculture.

PRINTED BY THE GOVERNMENT PRINTER, ZANZIBAR.